

# Transfer of experience for the development of solar thermal products

## *Common Information Package*



## PART I: EUROPEAN SOLAR THERMAL STANDARDS

- SOLAR KEYMARK SUCCESS STORIES (ESTIF)
- SOLAR KEYMARK IN EUROPE (ADVANTAGES-DISADVANTAGES) (ARSENAL RESEARCH)

# The Solar Keymark Success Story

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European Solar Thermal Industry Federation

Brussels, 8 October 2008



European  
Solar  
Thermal  
Industry  
Federation

## Before the Solar Keymark

- In the 1990s financial support programmes in various countries
- European market grew from 250.000 kWth to over 800.000 kWth per year
- Many companies started exporting their products
- BUT: Different requirements in every incentive programmes became an obstacle to



# The birth of the Solar Keymark

One function only:

To certify conformity with EN standards

- EN 12975 for collectors
- EN 12976 for factory made systems



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# How the Solar Keymark works

Before I go into details:

Up to date information is available at

[www.solarkeymark.org](http://www.solarkeymark.org)

*Part of the work was financed by the European Commission, under the Intelligent Energy Europe programme*

**Intelligent Energy**  **Europe**

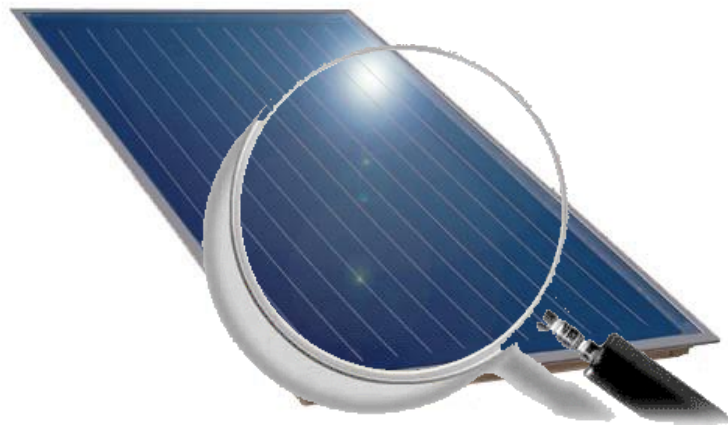


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# How the Solar Keymark works

## 4 Key requirements:

- Initial type test at an accredited test lab
- Sample selected by inspector out of production or stock
- Factory production control system (similar to ISO 9000 series)
- Physical inspection of current product after 2 years



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# Certification bodies and testing labs

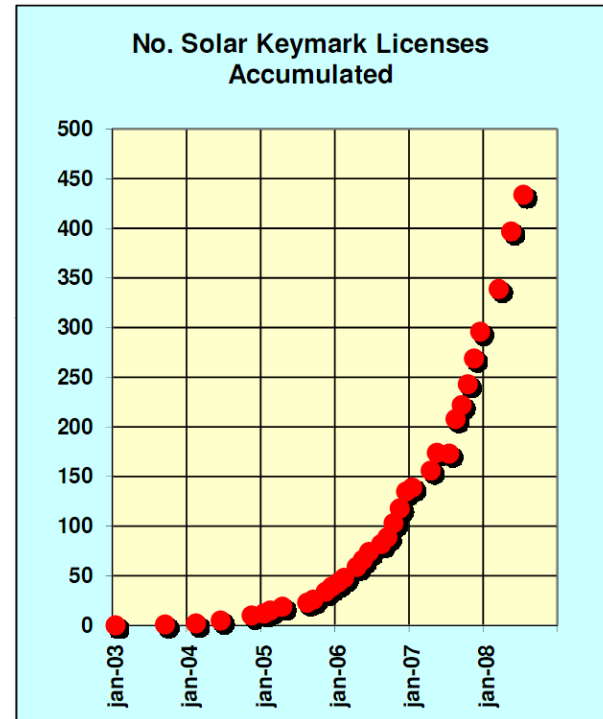
- Currently 5 empowered certification bodies
  - CERTIF (Portugal)
  - DIN CERTCO (Germany)
  - ELOT (Greece)
  - ICIM (IT)
  - SP (Sweden)
- 16 Keymark test labs for EN 12975 and EN 12976, for a list see [www.solarkeymark.org](http://www.solarkeymark.org)





# Acceptance by the industry

- First Solar Keymark collector: Thermomax in 2003
- First Solar Keymark system: Solahart in 2005



# Solar Keymark Database

## Collectors

2008-08-15

J.E.Nielsen

Red fields indicate that data are not available yet

Name of licensee with <a href="#">link</a> to the web page of licensee (close link with "browser return")	Name of collector type	Country of licensee	License no. with <a href="#">link</a> to data sheet	Certification body
<a href="#">A Concept Leszkovich GmbH</a>	Sol Victor 1000	AT	<a href="#">011-7S427 F</a>	DINCERTCO
<a href="#">A Concept Leszkovich GmbH</a>	Sol Victor 2000	AT	<a href="#">011-7S428 F</a>	DINCERTCO
<a href="#">A Concept Leszkovich GmbH</a>	Sol Victor 3000	AT	<a href="#">011-7S429 F</a>	DINCERTCO
<a href="#">A.O. Smith Waterproducts Company BV</a>	AOSP-240	NL	<a href="#">011-7S242 F</a>	DINCERTCO
<a href="#">ACV International, S.A.</a>	KAPLAN 2.4	BE	<a href="#">PSK-002/2007</a>	CERTIF
<a href="#">AKS Doma Solartechnik GmbH</a>	Doma Flex 5130 14-20, 23-29, 31-37	AT	<a href="#">011-7S409 F</a>	DINCERTCO
<a href="#">AKS Doma Solartechnik GmbH</a>	Doma FLEX ALU 502 135-136,139-146, 294	AT	<a href="#">011-7S388 F</a>	DINCERTCO
<a href="#">ALTUS ENERGY</a>	AS 215	FR	<a href="#">011-7S395 F</a>	DINCERTCO
<a href="#">ALTUS ENERGY</a>	AS 250	FR	<a href="#">011-7S423 F</a>	DINCERTCO
<a href="#">AMK Collectra AG</a>	LPC10	CH	<a href="#">011-7S440 R</a>	DINCERTCO
<a href="#">AMK Collectra AG</a>	OPC 10, 15	CH	<a href="#">011-7S411 R</a>	DINCERTCO
<a href="#">AMK Collectra AG</a>	OWR12	CH	<a href="#">011-7S353 R</a>	DINCERTCO
<a href="#">AO Sol - Energias Renovaveis, Lda</a>	CPC 3E+	PT	<a href="#">PSK-013/2008</a>	CERTIF
<a href="#">AO Sol - Energias Renovaveis, Lda</a>	CPC AO 3E+	PT	<a href="#">PSK-013/2007</a>	CERTIF
<a href="#">AO Sol - Energias Renovaveis, Lda</a>	CPC AO SOL	PT	<a href="#">PSK-008/2007</a>	CERTIF
<a href="#">Apricus Solar Co., ltd</a>	AP-10, 18, 20, 22 & 30	CN	<a href="#">011-7S161 R</a>	DINCERTCO
<a href="#">ARCON SOLVARME A/S</a>	HT-SA	DK	<a href="#">011-7S110 F</a>	DINCERTCO
<a href="#">Arsolar by Ramark srl</a>	AR10HP70	IT	<a href="#">021BN/0</a>	ICIM
<a href="#">Arsolar by Ramark srl</a>	AR20HP70	IT	<a href="#">027BN/0</a>	ICIM
<a href="#">AS Solar GmbH</a>	AS-CPC 6/12/18	DE	<a href="#">011-7S196 R</a>	DINCERTCO
<a href="#">AS Solar GmbH</a>	AS-EFK 2.2	DE	<a href="#">011-7S208 F</a>	DINCERTCO
<a href="#">AS Solar GmbH</a>	AS-FK 2.3	DE	<a href="#">011-7S179 F</a>	DINCERTCO
<a href="#">AS Solar GmbH</a>	AS-FK 2.3	DE	<a href="#">011-7S446 F</a>	DINCERTCO
<a href="#">Aspersia S.L.</a>	SV-HP-10, SV-HP15, SV-HP-20	ES	<a href="#">011-7S345 R</a>	DINCERTCO
<a href="#">Asunim Solar LDA Corgo da Zorra</a>	CTA18	PT	<a href="#">011-7S139 F</a>	DINCERTCO
<a href="#">Ati di Mariani &amp; c. s. n. c.</a>	Discoterm mod.135	IT	<a href="#">PSK-004/2007</a>	CERTIF
<a href="#">AUGUST BRÖTJE GmbH Werke für Heizungstechnik</a>	FK 26 W	DE	<a href="#">011-7S039 F</a>	DINCERTCO
<a href="#">AUGUST BRÖTJE GmbH Werke für Heizungstechnik</a>	IK 25 E	DE	<a href="#">011-7S037 F</a>	DINCERTCO
<a href="#">AUGUST BRÖTJE GmbH Werke für Heizungstechnik</a>	Solar Plus DF 20 / Solar Plus DF 30	DE	<a href="#">011-7S062 R</a>	DINCERTCO
<a href="#">AUGUST BRÖTJE GmbH Werke für Heizungstechnik</a>	Solar Plus HP 20 / Solar Plus HP 30	DE	<a href="#">011-7S061 R</a>	DINCERTCO
<a href="#">AWB</a>	SR 2.02	NL	<a href="#">011-7S121 F</a>	DINCERTCO
<a href="#">Batec A/S</a>	BA22, BA30	DK	<a href="#">SP 46 97 01</a>	SP
<a href="#">Baxi Roca</a>	NEOS-S	ES	<a href="#">011-7S303 F</a>	DINCERTCO
<a href="#">Baxi Roca</a>	PS 2.0	ES	<a href="#">011-7S287 F</a>	DINCERTCO
<a href="#">Baxi Roca</a>	PS 2.4	ES	<a href="#">011-7S277 F</a>	DINCERTCO
<a href="#">Baxi UK</a>	DF100 20, 30	UK	<a href="#">011-7S385 R</a>	DINCERTCO
<a href="#">Baymak Mak. San. ve Tic. A. S</a>	Selective Surface	TR	<a href="#">011-7S137 F</a>	DINCERTCO
<a href="#">BBT Thermotechnik GmbH</a>	SKB-s	DE	<a href="#">011-7S049 F</a>	DINCERTCO
<a href="#">BBT Thermotechnik GmbH</a>	SKC-s	DE	<a href="#">011-7S050 F</a>	DINCERTCO
<a href="#">BBT Thermotechnik GmbH</a>	SKT2-s	DE	<a href="#">011-7S053 F</a>	DINCERTCO
<a href="#">BBT Thermotechnik GmbH</a>	SKT3-s	DE	<a href="#">011-7S051 F</a>	DINCERTCO
<a href="#">Bio-Energietechnik</a>	BEF-1070	IT	<a href="#">027BN/0</a>	ICIM

# Acceptance by Member States

- Most EU Member States accept Solar Keymark'ed products as eligible for support programmes
- Since 2003:
  - Sweden adapted national P-Mark to bring it inline with the Solar Keymark
  - Portuguese certificate equal to Solar Keymark
  - France accepts Solar Keymark'ed collectors for their national tax break
- BUT:
  - DE with additional requirements (Blue Angel)
  - ES requires ISO 9001 certificate
  - Various regional programmes have differing requirements thus hampering free trade



# Please do not hesitate to contact me:

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# Solar Keymark in Europe

## Advantages - Disadvantages

DI (FH) Roland Sterrer, BSc.

Österreichisches Forschungs- und Prüfzentrum  
Arsenal GmbH arsenal research



## What may have the following things in common?

- floor heating
  - waste water pipe
  - thermal insulation
  - cast iron pipes
  - sun glasses
  - ladders
- They may **fulfil** the requirements of the relevant **European Standards**
  - They may be produced in a factory where an **quality management** is implemented.
  - Both aspects are **controlled by an independent party** periodically.
  - So they can be granted are **Keymark**





# KEYMARK

- The Keymark is the pan-European voluntary third-party certification mark, demonstrating to users and consumers that a product is in conformity with the relevant European Standard.
- At the moment **25 certification bodies** located in 15 different European countries already operate Keymark schemes on the basis of almost **150 European Standards** for 28 product groups.
- The Keymark should not be confused with CE marking.



European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung



.. the key to the  
European market!



## What is the “**SOLAR**” Keymark?

- CEN/CENELEC European Mark Scheme, called also a KEYMARK Scheme specially for
- Solar thermal collectors (EN12975)
- Factory made solar thermal systems (EN12976)
  
- Product certification
- independent factory inspection / QMS (periodically)
- independent testing according to EN standards (test samples to be sampled by independent inspector)
- biannual “surveillance test”, detailed inspection of products







# The Solar Keymark History

- Before 2003: If you wanted to sell one collector to different countries in Europe, you had to undergo several different tests and gain additional certificates and approvals.
- = very complicated, expensive and cumbersome
- → in 2003 the European Solar Thermal Industry and major testing institutes formulated the Solar Keymark Scheme rules
- major goal: to reduce the wild growth of testing requirements, certificates in order to reduce the trade barriers and open the European market for Solar Thermal products

# Current standards

- **Collectors – EN 12975:**
  - Durability, reliability, safety, performance of liquid heating collectors, glazed & unglazed, “low” temperature
  - Not included: ICS, (tracking concentrating collector), acc. ageing, air collectors
- **Factory made systems – EN 12976:**
  - Durability, reliability, safety, performance of “kits”
  - Not included: Tests for DHW+SH (combisystems), air systems, cooling





# EN 12975 – Scope of application

- liquid heating collectors
  - flat plate
  - evacuated tubes
  - uncovered absorbers (i.e. for swimming pools)
- validating the durability, reliability and safety requirements
- 3 test methods for the thermal performance characterisation
- not applicable to:
  - collectors in which the thermal storage unit is an integral part of the collector to such an extent that the collection process cannot be separated from the storage process. □ EN12976 – Premanufactured Systems
  - not applicable to tracking concentrating collectors



# EN 12975 – Tests to be performed

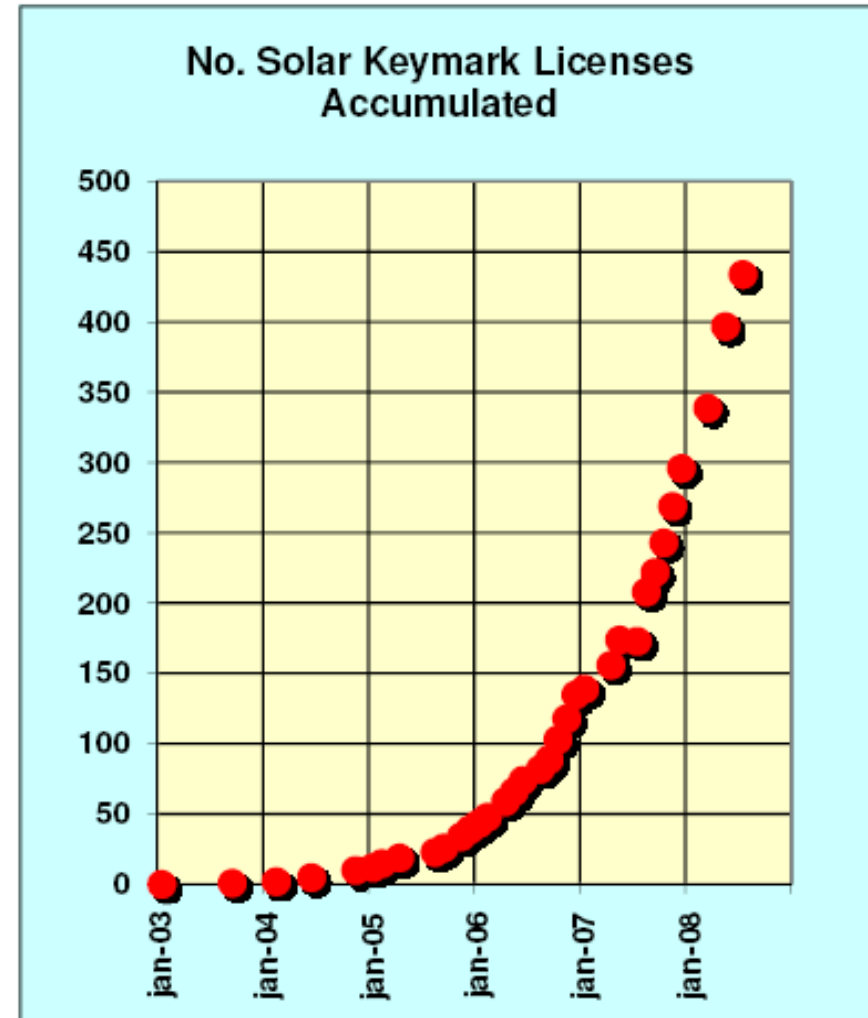
- Internal pressure
- High-temperature resistance / Stagnation temperature
- Exposure
- Internal & External thermal shock tests
- Rain penetration
- Freeze resistance (if freeze resistant collector)
- Mechanical load
- Thermal performance
- Impact resistance (optional)
- Final inspection
- Thermal performance test





## The trend

- strong increase of products certified
  - over 450 products
- all national subsidy schemes and regulations in EU accept Solar KEYMARK
- only exceptions:
  - Spain: ISO 9001 certificate
  - Germany: „Blue Angel“ declaration (525 kWh/a)
  - France: some insurance companies ask for CSTBat)







## ... and then?

- **start marketing**  
the Solar Keymark states to the buyer:
  - reliable quality
  - reliable performance information
- **start exporting**
  - The Solar Keymark works almost all over Europe
  - No need for the doing the same tests in the different countries
- **regular inspection of product and factory**
- **paying annual certification fee**
- **report changes in product**





# Resume of benefits

- **reduced testing for producers**
    - one test for all countries
    - freedom of choice with testing centres
    - type testing instead of testing of all possible collectors (different sizes,..)
  - **high quality products on the market**
    - e.g. no Chinese products have passed the testing so far at arsenal research
  - **improved quality**
    - through factory inspection the standard of production processes improves
  - **gives financing institutions confidence to support high quality**
- keeps financing schemes alive





## Are there any problems?

- no valid EN standard → no Keymark
  - solar air collectors, collectors made of polymers, ..
- duration: 3-6 months
  - mostly due to long duration of durability testing which depends on the actual weather
- still some additional requirements
  - Germany, Spain, France
- Solar Keymark scheme rules and standard need rework to be more efficient and open for new developments



# Solar Keymark Network

- to ensure a smooth process of Solar Keymark certification
- Updating the Solar Keymark certification scheme
- promotion to make it accepted in all national building regulations and renewable energy subsidy schemes
- quality assurance measures such as round robin tests are performed

## Participants:

- empowered certification bodies
- accredited test labs
- inspection bodies
- solar Keymark secretariat (ESTIF)
- official representative from CEN
- chairman of TC 312
- chairman of ISO 180
- **One representative of each national trade association that is a member of ESTIF**
- **Industry participants raising issues being discussed at the meeting.**



# Outlook

- Solar Keymark for solar storages according to EN12977-3
- draft: IEA-SHC Task on testing and certification
- proposed: IEE project on updating standards for solar thermal applications
  
- more countries will make SK a requirement for financial incentives
- nonEU (Australia, US,..) countries will accept the Solar Keymark



## Further information

[www.solarkeymark.org](http://www.solarkeymark.org)

- list of certified products
- list of testing laboratories
- list of certification bodies
- download of brochures in CZ, Spanish, Engl., German
- detailed country reports



The graphic is a promotional poster for Solar Keymark. It features a blue and yellow color scheme. On the left, there is a photograph of a solar thermal collector in a laboratory setting. In the top left corner, there is a small logo consisting of a stylized 'E' with a yellow dot above it. The main text is in yellow and white. The title 'SOLAR KEYMARK :' is in yellow. Below it, there is a list of five benefits, each preceded by a yellow square icon: 'REDUCES ADMIN & TESTING COST', 'INCREASES SALES OPPORTUNITIES', 'PROVIDES ACCESS TO EU MARKET', 'ENCOURAGES GROWTH OF MARKET', and 'PROVIDES CERTIFIED PRODUCT QUALITY'. At the bottom, it states 'FAST BECOMING THE "DE FACTO" EUROPEAN SOLAR THERMAL MARK' and provides the website 'WWW.SOLARKEYMARK.ORG'. On the right side, there is a vertical banner with the text 'SOLAR KEYMARK' in yellow on a blue background. There are also small inset photos of people in a laboratory.

[www.estif.org](http://www.estif.org)





# Keymark versus CE marking

The Keymark is very often confused with CE marking.

- The Keymark is a demonstration that the product is in conformity with the relevant European Standard.
- The Keymark can help to choose between products conforming to the legally required minimum characteristics in the European Economic Area, and products conforming to the complete European Standard.
- The Keymark is a Quality mark.
- The Keymark addresses users and consumers.
- The Keymark is a voluntary certification mark.
- The Keymark can only be granted by certification bodies, who are responsible to ensure continued compliance of the product with the requirements.
- **CE marking** is an indication that the product should be in conformity to the provisions of all applicable European Directives.
- **CE marking** can be based on compliance of the product with the characteristics mentioned in Annex ZA of the relevant harmonised European Standard. Some characteristics in that standard may not be included in Annex ZA.
- **CE marking** is a passport for the EU market.
- **CE marking** addresses the responsible market surveillance authorities.
- **CE marking** is mandatory.
- The affixing of **CE marking** may require the intervention of Notified Bodies, but always remains the responsibility of the manufacturer or his authorised representative.